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Rural Lines

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A Message from the **ADMINISTRATOR**

REA's rural telephone program was 5 years old last October 28. During these 5 years, REA has made gross loan allocations totalling \$217 million, to 345 borrowers. Some of these allocations were later withdrawn, so that the net figure is \$200 million representing loans to 300 borrowers. Cooperative associations make up 162 of the borrowers, and 138 are commercial companies. REA loans have now been made in 42 states and Alaska. The nearly \$200 million loans will provide modern telephone service for more than 207,000 present subscribers and extend this service to 230,000 additional farms and rural establishments without telephones.

During the past two years, we have spent much time in revising, streamlining and simplifying REA loan functions and requirements. We feel that telephone organizations will find our policies and requirements practical if they sincerely desire to develop and provide high-quality rural telephone service. We have eliminated certain duplications in the loan processing. An REA loan is now a package deal consisting of an area coverage survey and a system design.

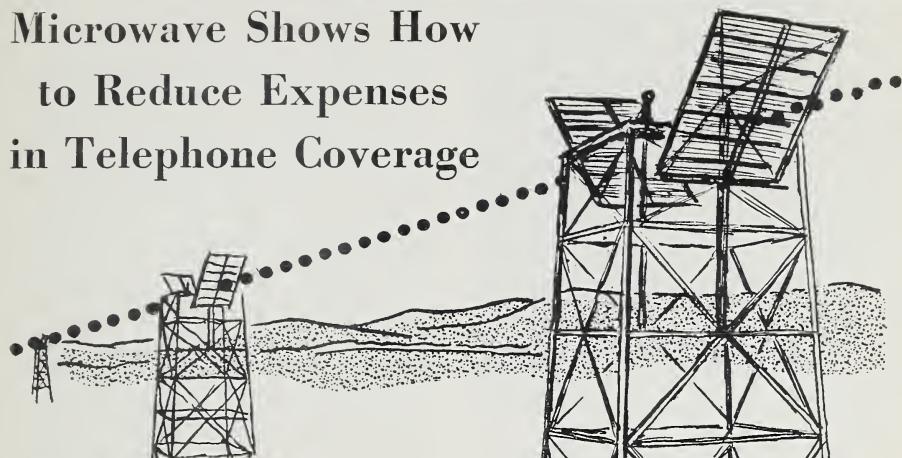
The time required for processing a loan has been substantially reduced. It is now possible for an applicant to proceed with subscriber surveys and engineering plans and to receive a loan within a much more reasonable length of time than has previously been the case.

One of the continuing difficulties is the lack of telephone engineers. Both the REA staff and borrowers have suffered from the shortage of trained engineers. This is improving as additional consulting engineering firms become more interested in independent telephony and as additional technical people are trained, but there is still a good way to go. There is a real field here for the nation's engineering talent.

I have only one desire and that is to be of service to rural America in accordance with the principles and objectives that Congress had in mind when it provided this loan program through REA. In every respect, I am ready and willing to share the challenge of developing a strong and more serviceable rural telephone program. Part of that challenge has to be borne by the farmers, too, because it is with them that the action to get telephones must start. Working together, we should be able to develop the kind of service of which we will all be proud in the years to come.

Administrator.

Microwave Shows How to Reduce Expenses in Telephone Coverage



IN ISOLATED areas, where pockets of subscribers are cut off from the exchange offices by swamp, mountains, or rocky areas, the construction of a telephone line can be prohibitively expensive. The use of two-way microwave transmission may be the practical solution of such service problems. Several studies are now underway to develop adequate equipment for such services and to determine operating characteristics and installation, operating and maintenance costs.

The most recent test of microwave equipment is an installation in Wisconsin which connects an isolated group of farms at Chalk Hill in Marinette County with the dial exchange office (12 airline miles away) at Wausauke. This is the service area of the Amberg Telephone Company, an REA borrower. A three-year test of this major rural telephone experiment began last month when the Amberg Company began operating a microwave radio relay link of frequencies above 6000 megacycles to connect its isolated group at Chalk Hill. The operation of the system began immediately after FCC approval. It provides two telephone circuits with potential of 10 subscribers on each,

with selective ringing for Chalk Hill subscribers, connected by wire line with the Chalk Hill outlet through standard microwave outfits. Many more may be served by coded ringing with a range up to 50 miles. Although REA funds are being used in the project, the expense of the overall development project is being assumed by Raytheon Manufacturing

Corp. The terrain in the stretch between Wausaukee and Chalk Hill, 12 miles by radio relay and twice as far by road, is described as economically impossible from the wire line construction standpoint. Winding roads between points, cutting through thick timber, pass through rock formations which would necessitate setting poles in solid rock.

"Beats me what science can do," opined Mrs. John Butterfield, a young mother living in the remote, logged-off country north of Wausaukee, as she tried out her new microwave telephone.

"It's simply wonderful," she said, "so clear and free from line noises. You know, when we heard the Amberg Telephone Company of Wausaukee was going to extend its service, we decided we needed a phone,

with our baby and all. We were told it would cost too much to run a line out to our home. So we dropped the idea until one day they came around and installed this microwave set.

"I can't tell you how it works, but it looks like it will come in handy for lots and lots of rural families like us."

Microwave equipment serving the Butterfields is simply a directional radio wave which uses a frequency channel in megacycles. It serves as a carrier of one or more voice channels and provides the same telephone service as conventional type equipment.

Cutting in of microwave service Sept. 23, 1954 was a big thrill for the Butterfields and a history-making milestone in American telephone communication. And for REA the date marked another forward step in a continuing program of bringing telephone service to rural people.

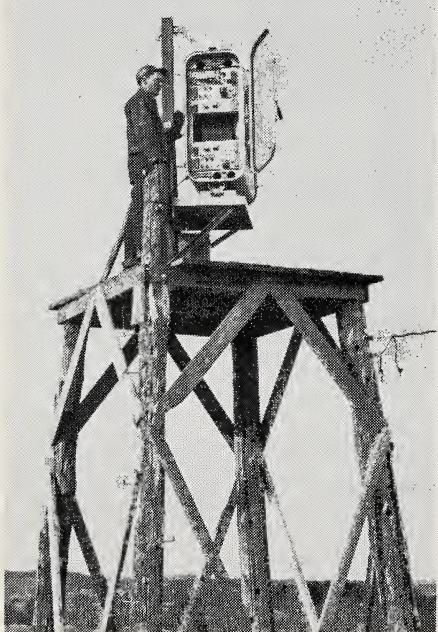
It came about this way:

In shaping plans for modernizing its telephone system, Amberg Telephone Company, a new REA borrower, aimed to give top service to some 300 rural subscribers over the next five years.

"We hoped to install telephones in all the homes that wanted them," says Robert H. Keating, company manager: "But we found we couldn't extend service to out-of-the-way residents like the Butterfields without stepping up telephone costs across the board to subscribers.

"REA's area coverage policy doesn't require a borrower to extend service if it will put an added financial burden on the rank and file of subscribers. And that's what would happen in this case.

"Engineers of REA who were helping us with our system design and feasibility studies told us about their experience with microwave controlled telephones, and explained that they figured they could be installed



This is one of two towers used in the microwave system installed for Amberg Telephone Company, Wausaukee, Wisconsin. Rigged to each tower is a combination transmitting and sending set.

at the Butterfields and neighboring farms at less cost than conventional equipment. The idea sounded so good we decided to test the new microwave phones for a year.

"We're serving some four families by microwave now, and expect to extend service to a dozen more or so. We believe this new development in electronics will meet REA's area coverage requirement and prove an economical way of serving small numbers of rural subscribers. It looks promising, but we'll have to wait and see how well it pans out."

Microwave equipment installed for Amberg includes two towers, 60 and 35 feet. On each tower encased in a small metal box (about the size of a four-drawer filing cabinet) is a highly sensitive combination transmitter and receiver.

High frequency pulses of electrical potential are transmitted through the channel radius which starts out with a width of about 3 feet. This beam widens as it approaches the receiving station. At a mid-point, the beam broadens out to around 500 feet. Then it narrows again on the last lap to the receiver.

Pulses go out from the telephone when a number is dialed and are amplified at the transmitter and placed on the beam through mechanical action of equipment. Receiving equipment again amplifies the signal and transfers pulses onto regular telephone lines which run to central office just as in conventional dialing.

As Raytheon Manufacturing Company points out, the new step in telephony has many advantages over wire lines. For example, service can't be interrupted by fallen or broken wires. Lightning and winds can't knock microwave beams down and system failure resulting from severe weather conditions is reduced to a minimum.



Mrs. John Butterfield and her new microwave controlled telephone, lives 11 miles north of Wausauke, Wisconsin.

And as with regular wire lanes, all telephone functions, including voice transmission, dialing, ringing and signaling are transmitted by microwave. Equipment interconnects directly with conventional telephone terminals as subscriber's subsets, central office equipment and trunk lines without any changes.

What appeals to Mr. Keating is that his microwave controlled phone system is engineered to give long, trouble-free service. Normally, only routine checking is required.

Mr. Keating is finding out there are a lot more talking-points for microwave controlled telephones.

Don't look for microwave phone systems to run the pants off conventional wire lane installations, at least not now. But a good "report card" signed by Mr. Keating on his pilot system could be good news to a good many rural folk in the same fix as the Butterfields. And it's going to be interesting keeping tab on the doings at Wausauke. There may be quite a story to tell about microwave phones along about this time next year.

oregon system expands

to serve loggers, farmers



Members of Pioneer Telephone Cooperative, serving parts of Lincoln, Polk and Lane Counties in west-central Oregon, still talk about the mass meeting called in Eddyville, one fall evening in 1949. That was the beginning of their modern telephone system.

It was a friendly, but determined gathering of rural people, plainly unhappy with farmer lines and the complete lack of service to fringe and outlying mountain areas. There were those who said telephone communication in some parts had not improved much since 1880 when J. E. Henkle installed the first telephone in western Oregon in his mercantile store in Philomath.

The people listened to community leaders like W. F. Wakefield, Lewis Botoroff, H. R. Glascock and Donald Stokes tell about REA and its new telephone loan plan. After that, farmers themselves took a hand and laid the groundwork for setting up the non-profit Pioneer Telephone Co-op.

Today, members are glad they organized their co-op. Telephone service now cutting over to dial is getting better and better as lines reach out into the Coast Range and service is cut in to communities like Alsea, Norton, Lobster Valley, Triangle Lake, Kings Valley and Philomath.

Pioneer took over 3 local telephone

companies in completing its organization: Coast with 913 subscribers, Eddyville, 34, and Blachly-Deadwood with 55 subscribers. Total subscribers today number 473 business and 1,291 residential.

With REA loans of \$1,316,000 and \$378,000 Pioneer has installed or improved 562 miles of lines and constructed 15 dial exchanges. Already dial service has been cut in to 13 communities. Another will be changed over to dial in February.

Dial service will mean a lot to every one in Pioneer's area. Phones have long been needed by mill and logging workers in deep woods sections of the Coast Range to keep tab on work schedules. Mill operators will use their new phones to keep in touch with markets, supply houses, and workers. Good telephone service is part and parcel of a farmer's life. Telephone service from remote forest areas is a safeguard in case of fire, too.

Board directors with construction experience helped design the unattended exchange structures. They are built to withstand vandalism, fire and dampness. Each unit measures 16 by 24 feet with a height of 11 feet. Walls and roof are concrete and there are no windows and but one door. Construction cost was about \$5,000 for each exchange.

Rodney Cummings, manager of Pioneer and a veteran telephone man, says things might not have gone so well in their organization work without timely and helpful assistance from Benton-Lincoln and Blachly-Lane Electric co-ops.

One of the factors influencing farmers to favor cooperative action in solving their telephone problems was the good service many of them had experienced as members of electric co-ops. They liked the way group action worked out in providing them with efficient electric service.

Mr. Cummings says, "they have helped our co-op in every possible

way. Aid from experienced co-op leaders means a good deal—especially to a new cooperative. They helped us iron out our problems. And we have worked out a harmonious arrangement for joint use of poles and right-of-way brush clearing that has proved satisfactory all around.

"Members and directors of all 3 co-ops have gotten into the habit of taking in each other's annual meetings. B. R. Little, manager of Benton-Lincoln Electric Co-op, was the speaker at our last annual get-together.

"We've found it pays to foster good inter-co-op relationships."

K. WILDE BLACKBURN, 48, affectionately known as "Blackie" to his many friends, died at his home in Arlington, Virginia, on December 21, of a heart attack.

Blackie "grew up" with the REA and became one of its most popular and well known personalities.

A native of West Belle Vernon, Pa., he was graduated from Temple University in 1929 and obtained his law degree from the University of Pennsylvania Law School in 1932. He is survived by his wife and two children.

He had handled legal matters connected with REA since his appointment to the legal division on May 21, 1935. He also had supervised legal work in the REA telephone program since its inception in October 1949.

Mr. Blackburn, as Associate Solicitor for Agriculture Credit Services for the Agriculture Department, played a vital part in shaping policy in the Rural Electrification Administration during his work in the Office of the Solicitor.



K. WILDE BLACKBURN

TELEPHONE PROGRAM ADVISERS CONVENE TO DISCUSS PROBLEMS

Possible solutions to a half dozen of the more pressing problems in REA's rural telephone program were proposed by a telephone advisory group which met with the Administrator December 15.

The 18 men, representing the various segments of the telephone industry, discussed with top officials of the REA telephone staff a wide range of policy and procedural matters, including the following:

Difficulty in obtaining satisfactory agreements with connecting companies for extended area service; the shortage of consulting engineers; equity requirements for commercial companies which apply for REA loans; the possibility of loans for a single exchange area at a time for an applicant's system; the need for consultation on how best to provide service in certain specified areas; and attitudes within the telephone industry toward the REA loan program to improve and extend telephone service in rural areas.

The consultants drew up a statement of recommendations which they believe will benefit REA's rural tele-

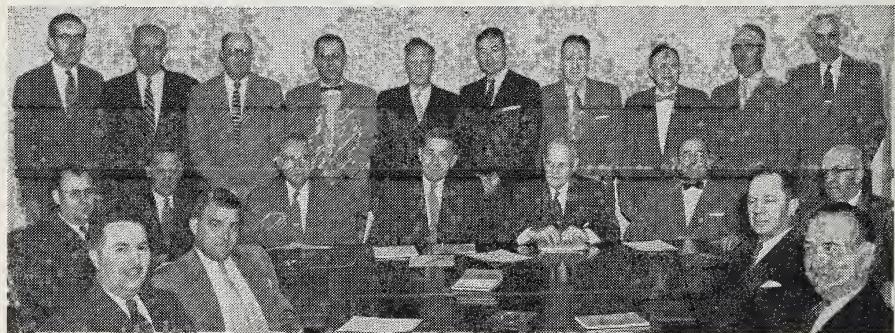
phone program. This statement follows:

"In the interest of encouraging the continued improvement and expansion of telephone service in rural areas, and to assist this program generally, the committee recommends for consideration the following points:

"Financing. That all telephone companies, associations or groups encourage and assist in the expansion and improvement of telephone service to rural areas and that they consider REA financing where needed.

"Partial System Financing. That REA publicize its policy permitting an applicant to secure a loan for a part of its system if the area under consideration is economically feasible as a unit.

"Cooperation To Expedite Program. That, insofar as practicable, REA continue its effort to obtain complete cooperation between the applicant for a loan, the connecting company, the engineer, contractor, suppliers, manufacturers, and state regulatory body in order to expedite the availability of adequate telephone service to rural areas.



Standing (left to right): K. Wilde Blackburn, James M. Capel, C. R. Thiessen, Frank Richmond, L. E. Armfield, William C. Henry, Orla L. Moody, Daniel B. Corman, Ross Gault, Ray Lynn. Seated (left to right, in rear): Glenn Bergland, G. J. Stover, George P. Steinmetz, Anchur Nelsen, J. K. O'Shaughnessy, Warren Clay, J. Lee Keiger. Seated (left to right, in front): E. C. Weitzell, J. K. Callaway, Riggs Shepperd, Jack E. Smith.

"Bidding. That REA clarify and publicize its policy on competitive bidding for borrower's construction and for purchase and installation of central office equipment, so that applicants may understand fully what exceptions are permitted.

"Equity. That REA clarify and publicize the bases for equity requirements which it establishes for commercial borrowers as security for the REA loan.

"Extended Area Service. The committee finds that extended area serv-

ice is still a problem to REA applicants and connecting companies in some instances, and for that reason recommends that all parties concerned get together early and on a cooperative basis for planning and engineering proper equipment. It is recommended, also, that at this time an equitable extended area service settlement agreement be negotiated. It is suggested that as a guide the report of the Extended Area Service Committee which was adopted by the USITA board of directors be used."

WHAT'S NEWS

Farmer's Bulletin 1832, **Farm Fences** by Edward G. Molander, 46 pages. Revised April 1954. Superintendent of Documents, U. S. Government Printing Office, Washington 25, D. C. Price 20 cents.

Contained therein is specific information on the kinds and life of fences, fence posts, cost of fencing, construction methods, gates and other details. Several pages are devoted to electric fences. Its principal uses, advantages and disadvantages are presented. Only approved electric fence controllers should be installed. Avoid homemade units.

USDA Information Bulletin 124, **Electricity on Farms in New York and New England** by Joe F. Davis. 42 pages. July 1954. Superintendent of Documents, U. S. Government Printing Office, Washington 25, D. C. Price 20 cents.

Records were obtained on 1115 electrified farms. The study shows that in 1951 the dairy farms averaged 9,001 kwh per year, poultry farms 6,538 and other commercial farms 4,768 kwh. Farm equipment used about 30% of the total. Dairy farms

had more electric equipment for use in farming operations than any other type. Within 10 years the average annual energy consumption per farm may reach 8,000 kwh or more.

Wisconsin Special Bulletin 3, **Farmers' Experience with Large Cow Stalls and Electric Cow Trainers** by L. A. Brooks and F. W. Duffee. 1953. University of Wisconsin, College of Agriculture, Madison, Wis.

This is a four-page summary of the reports of 89 farmers who increased the length and width of either stanchion or tie stalls for their dairy cattle. All are satisfied and some stated that it was the best investment they have made on the farm. Injuries to the cows are greatly reduced. The electric cow trainers keep the cows cleaner.

Wisconsin Special Circular 32, **Storing and Drying Ear Corn on Wisconsin Farms** by Department of Agricultural Engineering, 1953. University of Wisconsin, College of Agriculture, Madison, Wis.

Advantages and disadvantages for natural and mechanical drying with unheated and heated air are listed. Plans are presented for three methods of storing and drying ear corn. Also included are construction details, location and operation of the drier.



GET YOUR SHOW ON THE ROAD!

Dealer's Door-to-Door Sales Boost Michigan Co-op's KWH

Hal Smith, go-getting store owner of Sault Sainte Marie, Mich., has a dollar-studded tip for the nation's electric appliance dealers today—"Don't pass up rural markets."

The thing Mr. Smith wants to get over to the country's dealers is this: "Farmers generally are buyers, not shoppers. You can count on repeat business if you handle them right. But don't expect them to beat a path to your door. You've got to get up out of your easy chair and root out sales. And that means driving off hard-top roads."

The Cloverland Electric Cooperative in the upper peninsula town of Sault Sainte Marie has been a special beneficiary of Hal Smith's kind of promotion. While Mr. Smith says that 40 percent of his business volume now comes from rural people, Co-op Manager Roy Wells thinks Smith's promotion is largely responsible for the 15 percent step-up in the co-op's power load.

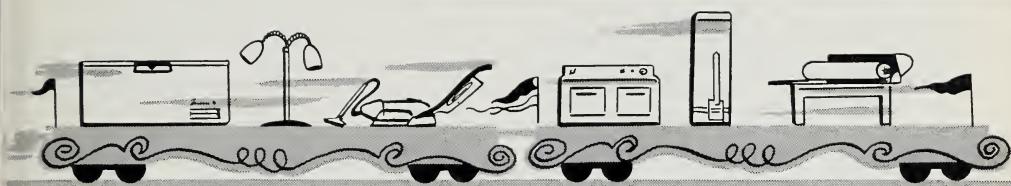
The co-op is giving appliance buying a good boost by offering 100 kwh of electric power a month free for a period of 4 months to members purchasing new ranges, water heaters or clothes dryers.

In addition, each month the manager supplies local dealers with a list of new consumers on the co-op lines.

Here's how dealer Smith puts the list to work. He has two salesmen who take trailer loads of electric appliances on "rural runs." The trailer is the salesman's "show room." When conditions permit the men demonstrate electrical items right in the farm home. There the appliances do a pretty good job of selling themselves.

A sample trailer load may include a range, washing machine and two sizes of refrigerator, or a freezer, water heater and dryers—all top items on the farmer's buying list. Each salesman makes about 15 to 20 calls a day, including callbacks.

ELECTRIFICATION SECTION



Mr. Smith makes these observations on rural selling:

"From the appliance dealer's standpoint, rural selling has many favorable angles. Most of our deals with farmers are clean ones, that is, no trade-ins. We figure this gives our salesmen a better opportunity to sell top quality items.

"**It is cheaper** for us to make deliveries in the field than have goods shipped out from our downtown warehouse. This saving more than offsets the higher commissions we pay our rural salesmen.

"When our salesmen deliver ap-

pliances direct to rural homes they do a better job of instructing farmer-buyers in the care and operation of the equipment. This cuts down the number of nuisance calls.

"We've been able to make substantial savings in maintenance costs by servicing buyers in groups or by neighborhoods."

Take Mr. Smith's word for it, the rural electric appliance field is a good market for dealers. And Mr. Wells' word that more appliance sales in farm homes mean increased power use and higher revenues to the rural electric system.

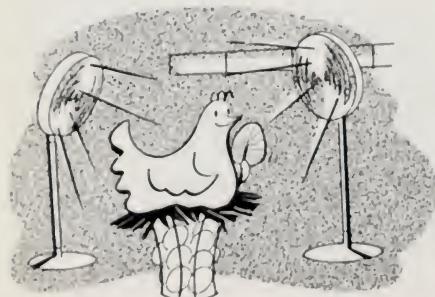


Hal Smith demonstrates his dealer technique in reaching the rural market of Sault Sainte Marie.

Charles E. Jewett, manager, Gold-enwest Electric Cooperative, Wid-baux, Mont., writes in his newsletter: "Mr. Simon Hazelton has this to say about irrigation. He figures he has used about 3,456,000 gallons of water to irrigate a small patch of alfalfa, part of his calf pasture and some trees. It has cost him about 1.8 cents per 1,000 gallons of water. He tells us that he has had two good cuttings from the alfalfa field, whereas the part of the field not covered by the sprinkler has produced only one poor cutting."

Midwest Electric, Inc., St. Marys, Ohio, features on the cover of its news-letters pictures of "all-electric" homes heated by electricity. A home equipped with 22 1,000-watt panels used 27,700 kwh in 1953. Another home heated by 14 1,000-watt panels used 22,020 kwh during the same year.

Northern Electric Cooperative, Virginia, Minn., in its newsletter promotes poultry ventilation. They report a member metering experiment covering 4 months. During this period 2 fans in 2 different poultry houses operated at a cost of 6 cents a day. The member reported that the fans eliminated dust, moisture and ammonia fumes and contributed substantially to the increased production of eggs during winter months.



POWER EXCH



Powers Luse, manager of **Hancock-Wood Electric Cooperative**, North Baltimore, Ohio, reports in the co-op newsletter that street lights on Routes 186, 25 and 12 are turned on and off by the sun which operates a photo-electric cell on the pole. . . . cheaper than hiring a "lamp lighter." Memberman Vance Vanderhoof says one of the smoothest farm operations he has watched is the way Ed Schultz handles his potatoes from field to semi-trailer truck. The whole deal is done electrically.

Farmers Rural Electric Cooperative, Glasgow, Ky., and Owen County Rural Electric Cooperative, Owenton, Ky., are working in cooperation with the Kentucky Heart Association to present 4 class demonstrations showing how housewives may save up to 75 percent of the steps they take in the kitchen. While the classes are intended chiefly for women with heart ailments, they are open to all housewives in system areas.

Whitley County Rural Electric Membership Corp., Columbia City, Ind., uses a page in its newsletter to promote electric incinerators. Experience with 2 such appliances now operating on the co-op lines indicates considerable consumer satisfaction. A 600-watt heating element disposes of 35 pounds of garbage and trash in

R USE ANGE



24 hours leaving but a thin layer of ash. Plugged into a 110-volt outlet, the incinerator operates without outside smoke or odor. It won't work for cans or bottles. The appliance can be installed anywhere a suitable flue is available.

Winnebago Rural Electric Cooperative Association, Thompson, Iowa, reports a return of 96.6 percent of 2,058 survey cards mailed to members. In the first year that television was available in the area, 34.7 percent of the members installed sets. There are 654 home freezers and 11 silo unloaders.

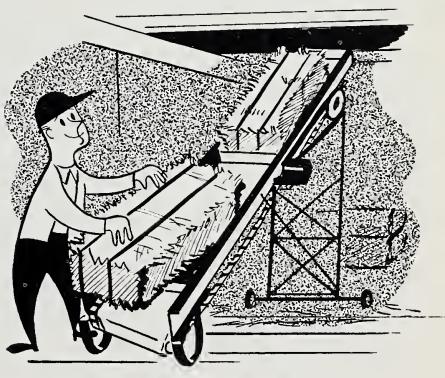
Writing in his newsletter concerning electric house heating, A. M. Redd, manager, Baldwin County Electric Cooperative, Robertsdale, Ala., makes the following comment: "Many members on our lines heat their home with electricity. Not only do all of them claim the cost is feasible but they also claim that there is nothing to compare to the cleanliness and safeness of electric heating.

House heating with electricity fits in with our system remarkably well on account of the balancing factor of summer air conditioning. The whole history of the economy of our counties says that members will heat with electricity and do so in increasing numbers."

Southeast Colorado Power Association, La Junta, Colo., James N. Myers, manager, has been carrying on a 2-year demonstration of corn drying in cooperation with the Extension Service. This year corn went to the dryer at 27 percent moisture content and after 6 days was down to 18 percent moisture content. Cooler nights and rain delayed getting the corn down to the 14 percent moisture content needed for best results in storage.

Lighthouse Electric Cooperative, with headquarters at Floydada, Texas, finds 122 different types of electrical appliances numbering more than 30,000 on its lines in a recent survey. Major appliances include the following: home freezers, 1,103; television sets, 1,145; pressure pumps, 1,020; and 137 grain unloaders.

Henry A. Parker Jr., electrification adviser for Vermont Electric Cooperative, Johnson, Vt., writes in the co-op newsletter: "Many members are now using electric conveyors, especially to handle baled hay. Conveyors can also be used to fill silos. Since most conveyors use a $\frac{3}{4}$ or 1 hp. motor, a great saving is made in power requirements over a conventional blower. Most of the conveyors are made by the members themselves."



The 1000 KWH CO-OP is here at last!

Are you dreaming of the day when your members will use an average of 1,000 kwh each month? Well, that's no dream. It's a reality on the lines of Lincoln Electric Cooperative, Inc. of Davenport, Washington. The co-op's members now use an average of 1156 kwh a month.

What does it? Take a look at some of these figures. Washing machines, 98.5%; refrigerators, 100%; water heaters, 94%; electric ranges, 72.9%; and water systems, 65.5%. And the use of power on Lincoln's lines is still climbing.

This is what all rural electric systems may look forward to, depending on local conditions and the effectiveness of their power use program.

You can trace Lincoln's achievement in KWH consumption to a combination of good grain and livestock incomes by members over the years and a practical, neighborly approach to load building problems by manager N. V. Fisher and the alert co-op board.

Lincoln hardly had its power distribution system in full swing when World War II rolled around. The Inland Empire, which included a good share of the co-op's distribution area, was caught in the whirl of war-time expansion. Newcomers moved into rural Lincoln, Adams and Grant counties. And with all the home-building and improvements going on consumption began building up. All went well with home wiring jobs until material controls were clamped on

and local merchants' stocks were cleaned out.

Manager Fisher faced this situation squarely, took the view that you can't sell electricity to new residents until their homes are wired. How Lincoln Co-op scraped together material and helped wire several hundred homes is an example of the many outstanding wartime accomplishments of electric cooperatives.

"We feel we laid the foundation for our present average KWH usage in the War years," says Mr. Fisher.

Again in the post-war period when power supplies were short in many Pacific Northwest metropolitan areas, Lincoln, with a firm power capacity, encouraged its members to carry out needed wiring jobs, and to use more electricity.

Another load builder has been the numerous sprinkler irrigation systems going in the area. This man-made rain, along with improved pasture mixtures, is turning out more and more beef per acre. Some of the 31 sprinkler irrigation users consumed an average of 4370 KWH per month last year. From 25 to 50 new irrigation systems are expected to be installed in the next five years.

On irrigation load building, Mr. Fisher says, "We've extended irrigation service to four new pumps for a total of 60 h.p. Our line capacity has also been increased to serve grain storage warehouses in all parts of the county, increasing the system load by several hundred h.p.

Lincoln's board is well aware of the load building impact of household and shop appliance sales. An all-electric kitchen featured in the co-op's Davenport headquarters spurred member interest. Also, good results are reported from the appliance displays set up by dealers at annual meetings. Quite a few orders were obtained through such demonstrations.

Today most farmer and rancher members are fairly well fixed with kitchen appliances, and dealers sales of items like ranges, refrigerators, freezers, dryers, and water heaters have leveled off somewhat.

Last spring the co-op set out to find the appliance saturation of its membership. A 65 percent return from a card questionnaire brought out some significant facts and showed that members were planning purchases of a variety of items that fall outside the usual kitchen and farm operational lines.

Saturation percentages give an idea of how household appliance sales have been going in this agricultural area: freezers, 72.9%; ranges, 93.3%; refrigerators, 100%; washing

machines, 98.5%; water heaters, 94%; water systems, 65.6%; clothes dryers, 39.7% and automatic furnaces, 33%.

In the shop and farm operation line the saturation rate was: air compressors, 36.3%; battery chargers, 48.4%; chicken brooders, 42.3%; cream separators, 33%; grain elevators, 17.5%; portable motors over 1 H.P., 44.3%; welders, 38.5%; stock tank heaters, 16.8%.

Among items listed for purchase by members were: 17 air conditioners, 46 clothes dryers, 22 dish washers, 38 freezers, 48 TV sets, 18 air compressors, 37 welders and 22 grain elevators.

Those are some of the reasons why Lincoln was able to pass the 1000 average KWH mark, boost overall consumption more than four times since 1946.

But don't look for those consumption figures to stand for long. Prospects for an even higher KWH average output are good, especially when considering the buying and load building power reflected by the co-op's questionnaire.



Irrigation systems like this help Lincoln Electric Cooperative reach the 1000 kwh per member per month mark.

TRAINING YOUR EMPLOYEES

College Work Offered By Illinois Borrower

“Training Scholarships” to advance employees’ education is one of the progressive new steps announced by McDonough Electric Cooperative, Macomb, Ill.

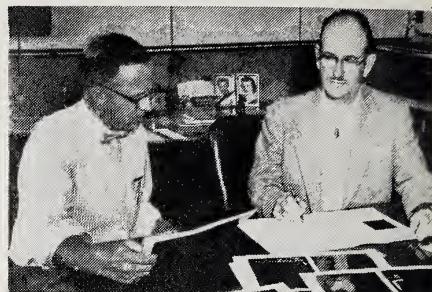
The training program—cost free to employees—was adopted last spring by the co-op board on a trial basis and already is off to a good start. So far 4 employees have enrolled in the local college or business schools for one or more of the following courses: Accounting (leads to CPA), cost accounting, shorthand and advanced stenography, and operating maintenance. Other subjects will be offered from time to time to serve employees’ educational needs.

Successful completion of a training scholarship course provides the co-op with better trained help and equips employees to handle more advanced jobs.

In announcing the scholarship program, Manager Arthur Peyton said, “We have employees who are interested in training for more advanced work with our cooperative. However, due to family and financial obligations they find it difficult to further their education.

“McDonough co-op has a welfare and educational account which handles problems of this kind so long as direct benefits are gained by the co-op through the added training of employees. We consider the fee involved an investment rather than an expenditure.”

Certain conditions must prevail for such a program to be mutually beneficial. Here are the requirements the co-op has outlined to govern its train-



Manager Arthur Peyton explains “Training Scholarship” to a McDonough employee.

ing scholarships:

1.—Training program to be handled through co-op’s “Employees’ Welfare and Educational Account.”

2.—Co-op to pay employees’ tuition within set maximums.

3.—Schools to advise co-op quarterly of employees’ progress and grades.

4.—An unsatisfactory grade or progress report is basis for withdrawal of cooperative support and employees become liable for expenses involved.

5.—Employee agrees to give specified length of service to co-op after completion of course, so many months’ or years’ service for a given amount paid by the co-op. For example: employee shall serve one year after completion of course for each \$150 in tuition paid.

6.—Co-op reserves right to reject applications for training.

7.—Training to be limited to courses within scope of co-op’s operations.

8.—Co-op limits employees to 3 training scholarships a year. Employee-applicants agree to write a 500-word statement explaining reasons for wanting more education and how it will benefit cooperative operations.

9.—Employee shall confine

courses to fit prior education and practical ability.

10.—An employee desiring advanced courses must be a high school graduate with at least a "C" average.

FLYING EXTENSION WORKER FAVORS PLANE FOR PLAINS

When the SATURDAY EVENING POST said those nice things about Frank W. Andrews, "Flying Extension Worker" of the University of Illinois, it wasn't news to many of the State's farmers and ranchers. For a long time they have known that Mr. Andrews of Champaign, Ill., really gets around.

An agricultural engineer, Mr. Andrews has given technical assistance to members in most of the Illinois rural electric co-ops. In addition, he has given many demonstrations on the use of electricity in corn drying, water system operation, barn hay drying and other rural electrification developments.

Mr. Andrews has flown more than 100,000 miles on farm assignments since 1947, working through county agents and extension service officials.

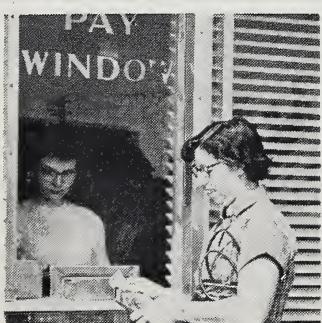
11.—Failure of employee to meet existing conditions of the training agreement will revoke cooperative assistance and employee becomes liable for all fees paid in his behalf.



Frank W. Andrews, "Flying Extension Worker," poses before taking off on a mission to one of his Co-op clients.

After 7 years of flying in and out of Illinois farming areas, Mr. Andrews says he has come to this conclusion: "For short runs, say up to 50 miles or so, it doesn't pay to fly. Plane travel works out best on those long hops to farming sections when it really is a time saver."

So far few of the country's extension workers regularly fly to work. But the success Mr. Andrews has had in taking to the airways may signal a change in the mode of travel of many agricultural specialists.



MCDONOUGH POWER COOPERATIVE has made bill-paying a lot easier for its members with a convenient outside pay window. Located at the right of the main entrance, the window is close to the co-op's parking area. Manager Arthur Peyton says the service is popular with members who like the time-saving feature. Here Mrs. Ebbert Teel of Table Grove, Ill., is paying her account to Mrs. Barbara Young, co-op clerk.

PIONEER

Peter Wallum, Northern Montana retired farmer who is president of the Hill County Electric Cooperative of Havre, at 77 is one of the most active Rural Electric leaders in his state. He attends all meetings, taking prominent part in the continuing development of electric progress in Montana.

The reason, declares Wallum, is that he believed that he and his neighbors would never get electricity for their farm and ranch homes near the Canadian border—and yet they have because of Rural Electrification.

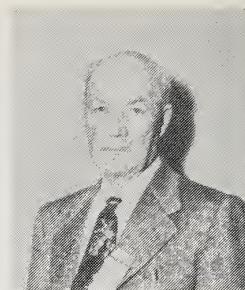
"Getting electricity in our country has been a miracle," Wallum says, "and I want to do everything I can to keep our system going."

Wallum's life story is one of true pioneering, not only in Rural Electrification, but also in his own career.

He came to this country in 1898 when he was 21 years old. He had come from Norway, and he settled temporarily in Minnesota. Then in 1910 he homesteaded a section of land northwest of Havre only seven miles from the Canadian border. He raised wheat.

He also raised a family of six children, all by lamp light, always wishing that his family could enjoy electric lighting like city people.

It was in 1944, however, before Wallum or any of his neighbors could see their way clear to try for Rural



MR. WALLUM

Electrification. A county agent first started it by surveying the area to see how many farm families were in the area from a density standpoint. Later, Wallum contacted the REA in Washington and meetings were held in Havre with REA field representatives to start loan and building plans. After a year's preliminary work, the Hill County Electric Cooperative was incorporated on November 5, 1945. First loan allocation was on April 19, 1946, construction started in January, 1947, and the lines first were energized on June 9, 1947, truly a great day for the Havre area rural folks.

Today, Hill County Electric Cooperative, managed by Harold Ebaugh, has 2,350 miles of line serving 1,700 members and a new \$85,000 headquarters building was erected in 1951. This Rural Electric system has revolutionized farm living in Wallum's area of north central Montana.

Wallum, as president of the co-op, now rents his section of wheat land to his son, and he gives freely of his time in furthering electric power progress in his region.

I.I.F.E.U.C. to Sponsor Workshop

The Inter Industry Farm Electric Utilization Council will sponsor a power-use workshop conference in St. Louis on February 3 and 4 for members of state committees recently formed among all segments of the industry. REA operations field representatives who are working closely with the committees will also participate.

THE LINEMAN

IT COULD HAPPEN



TO YOU

How Maryland Borrower Recovered After Storm

WHEN disaster strikes suddenly, power and communications are vital to the people in the area. Here is the story of what happened to one REA borrower—The Southern Maryland Electric Cooperative, Hughesville, Md.—when Hurricane Hazel struck. And it is the story of that system's tremendous efforts to get the lines back into service quickly. We are sure the description would fit other REA borrowers which suffered heavy losses. Reports coming to REA show that borrowers with little or no damage were quick to rush in emergency crews to help their neighbors.

H-Day

Sheets of wind-driven rain announced the arrival of Hurricane Hazel and Co-op phones began ringing at 8:30 a.m. with trouble calls. All preparations of equipment and manpower were made to combat the expected line damages.

By noon our switchboard was jammed with people calling to report lines down. At 4:00 p.m. the number one 66 KV transmission feeder went dead cutting off power for about 12,000 places. The power was switched over the the number two feeder in 25 minutes restoring current to most of these places.

However, the fury of the wind increased until 5:30 p.m., uprooting

trees over lines, breaking poles, and ripping wires from buildings. Some poles caught fire and transformers burned out with short circuits. More and more places were blacked out as the storm lashed its pathway over the area.

All three Co-op offices were beehives of activity. Auxiliary plants to furnish power were started. All line crews were dispatched by radio to trouble spots. Telephone operators recorded trouble reports. These were sorted by areas and the information relayed to line crews. By this time it was dark but calls were still coming in and extra men were sent out to patrol the backbone lines of the system. This was done to enable the crews to repair main lines first restoring power to hospitals and critical areas.

One sample of this trouble was the 22 KV line from Hughesville to Leonardtown. This line had a total of nine breaks and supplied power to St. Mary's Hospital. Midnight and on to morning found everyone still at his post!

The Second Day

More Co-op employees . . . bookkeepers, janitors and clerical help . . . reported dressed in working clothes. The Co-op workers now totalled over 125 men and women.

Calls went out to electrical contractors for extra crews. Holmes Fowler, Taylor Electric, B. J. Crury, M & H Engineering, Smiths Inc. and George Dorsey furnished help to replace services and broken meters. Dean and Beavers sent in six tree-cutting crews. Several attempts were made to secure line crews from other electric Co-ops but with no success. Every other electric company in neighboring states was in the same boat. Some were in worse shape than we were!

The work continued hampered by great losses of telephone service and the constant danger from broken live wires. Folks were constantly warned by telephone and radio to stay away from broken wires and not to cut trees from tangled lines.

Darkness came but crews worked round the clock. Relays were set up to allow brief rest periods. However, some men worked sixty hours without rest.

The Third Day

A clear, sunny day but without the usual Sabbath quiet. Every Co-op office was still a center of activity directing line crews. Phones were still ringing, radios were blasting and members were coming in to report outages. Reports of the damage were now available from all four counties and it was estimated that there were 7000 outages.

Progress was being made. As main lines were restored, men were shifted to tap lines and individual services.

Most people were patient about getting service restored. Many helped by adding dry ice to their freezers. Meadow Gold in La Plata, Sealtest in Lexington Park, and Smiths Inc. in Leonardtown made dry ice available. Neighbors helped each other by storing food, hauling water and providing cooking facilities.

Darkness found lines still down and crews still working. Weary workers dragged through 'til daylight with the end not yet in sight.

The Fourth Day

No slow-down in the repair work. Orders for the hard working crews were still pouring out to the radio equipped trucks. Members were still reporting their places out of service. Many gave helpful information about where trees were down and lines broken.

Slowly the stacks of trouble reports diminished as lines were repaired, but new reports kept piling up.

The Fifth Day

Cold and rainy weather added hardship to the work. Two line crews were shifted from the Hughesville office to the Hollywood office. This was done to speed up the work in the hard hit water front areas of St. Mary's County.

A check of the district offices found all crews gaining on the job. Final plans were made for the clean-up work. Crews worked through another night, but the end was in sight!

The Sixth Day

Conditions were nearly back to normal with only a few trouble calls dribbling in. As the line crews worked on, supervisors and foremen studied plans for permanent repairs. It was estimated that three weeks would be required to put the lines back in good order. It was decided that new line construction would be stopped during this time.

Night time found all of the electric system back in operation with the exception of a few scattered places.



How Islanders Finally Overcame Obstacles to Get Adequate Power

An underwater cable 5 miles long has changed "off again, on again" service to adequate, round-the-clock electric service on Kelleys Island.

This change for the better was made possible not only by an REA loan, but also by months of hard work by the people in this little rural community who were tired of either doing without electricity or getting only half-way measures. Their groundwork was done so well that when the \$200,000 loan was approved in March of 1953, it took only 4 months to get the system into operation.

Kelleys Island is a little bit of Ohio set out in Lake Erie about 5 miles from the mainland. For years after their neighbors on the mainland had electric power to help with their farm chores, the Kelleys Island folk still worked by candlelight. Then came the time when a diesel-powered generating unit was installed and lights blinked on over the island. Islanders expected to throw away their candles, but soon they were talking about the "off again, on again" service.

How Kelleys Island changed after the little community got its rural electric co-op last year! Today there's plenty of power for all. With power costs down, consumption is stepping up. You can't blame the people for going on a shopping spree and buying

the labor-saving equipment they waited for so long.

The agriculture of the island is no different from that of the mainland. The folks have tried to practice a live-at-home program—raising feed, corn, oats, and hay, for their livestock, which includes some beef and dairy cattle. Originally the island was famous for its grapes and wines, but today the big industry is fishing. For this, in order to compete with other fishermen, they needed electricity to freeze and pack their catch.

Now, with its good, dependable electric service, the incorporated island village can take its place with other Ohio rural communities.

Henry Beatty, the island's mayor and co-op president, and board members Howard F. Navorska, operator of Sunset Point Lodge; Franklin Poharence, who runs the general store "downtown"; J. W. Sennish, commercial fisherman, and R. C. Rummel, insurance and real estate, will tell you how close they came to losing their new electric system before they had it.

Mayor Beatty explains things this way: "By 1949 our people were keen for a new electric system. We called a village meeting and everyone had a chance to speak. Out of this gathering came the Lake Erie Rural Electric Co-op, which today serves some 230 consumers."

The first big task was raising \$28,000 to buy the existing 160-kva power plant from the Fred Martin estate. Kelleys' residents chipped in \$3000 for a starter. But, Mr. Beatty says, they spent many sleepless nights wondering where the rest of the money was coming from.

"Then Hancock, Licking, South Central and North Central electric co-ops came to our aid," Beatty added. "I don't think anything could have made us happier. It meant we could go ahead with our plans."

The new Lake Erie co-op operated the old power plant until its \$200,000 REA loan was available. The money was earmarked for new poles, lines, sub-station, and laying of a 5-mile transmission cable across Lake Erie from Lakeside on the mainland. At Lakeside the co-op's cable was to connect with Ohio Edison Electric Company lines.

Co-op members like to point to the speedy record set in getting the new distribution system energized. Loy Bros. Fisheries of Kelleys Island assigned a boat for the cable-laying operations. Neuman Boat Lines of Sandusky furnished a boat and scow

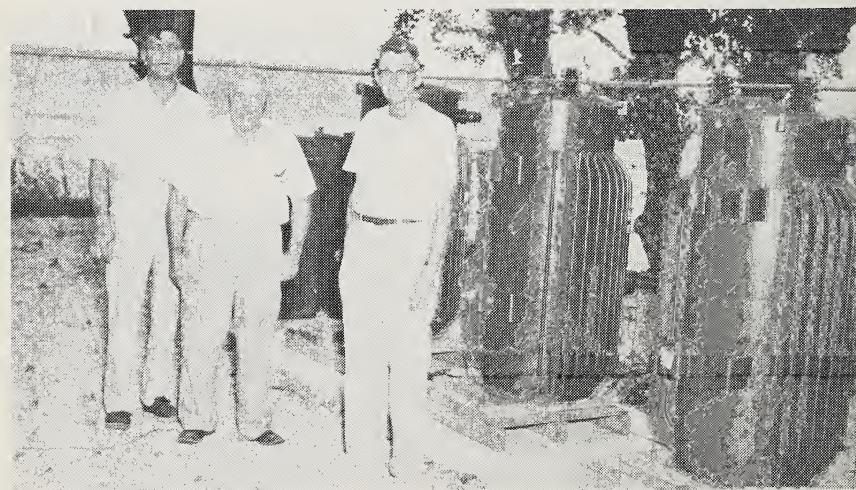
for use of the cable laying crew. Islanders rolled up their sleeves, pitched in and completed the job.

North Central's Manager, Ralph Williams, rates the highest praise from the Lake Erie co-op directors for laying out the smooth-running distribution system. He is still helping out as acting manager. "When major trouble develops," says Director Navorska "Ralph and North Central co-op fly a repair crew over in a half hour from Attica."

But Lake Erie's directors have taken on a lot of maintenance jobs themselves and eventually aim to assume more of these duties. For example, Mr. Navorska takes care of new hookups, disconnects, re-fusing and minor repairs, while Mayor Beatty is the street lighting "troubleshooter."

What does the new co-op mean to Kelleys Island in dollars and cents?

We asked that question of co-op directors. Among the brightest signs they cite are the new beach and residential homes being built which make more room for tourists, more revenue for the island. And the 7 new wells dug recently show how the new power is being put to practical use.



Left to Right—Kelleys Island Board Members, Howard Navorska, Vice Pres., R. C. Rummel, Board Director, Henry Beatty, Pres., beside new island sub-station.

**LOANS APPROVED OCTOBER 25 THROUGH
NOVEMBER 24, 1954**

ELECTRIFICATION

\$ 155,000	Lynches River Electric Cooperative, Pageland, S. C.	120,000	Decatur, Tenn.
440,000	Oklahoma Electric Cooperative, Norman, Okla.	355,000	Central New Mexico Electric Cooperative, Mountainair, N. M.
50,000	Roosevelt County Electric Cooperative, Portales, N. M.	456,000	Howell-Oregon Electric Cooperative, West Plains, Mo.
635,000	Walton Electric Membership Corp., Monroe, Ga.	220,000	Grundy County Rural Electric Cooperative, Grundy Center, Iowa
380,000	Choctawhatchee Electric Cooperative, DeFuniak Springs, Fla.	490,000	Delaware Electric Cooperative, Greenwood, Del.
50,000	Tombigbee Electric Cooperative, Guin, Ala.	720,000	Public Utility District No. 1 of Ferry County, Republic, Wash.
375,000	Bartlett Electric Cooperative, Bartlett, Texas	40,000	Roanoke Electric Membership Corp.,
50,000	Withlacoochee River Electric Cooperative, Dade City, Fla.	50,000	Rich Square, N. C.
465,000	Tongue River Electric Cooperative, Ashland, Mont.	245,000	Petit Jean Electric Cooperative Corp., Clinton, Ark.
270,000	Clark Rural Electric Cooperative Corp., Winchester, Ky.	1,400,000	North Star Electric Cooperative, Baudette, Minn.
50,000	Greenbelt Electric Cooperative, Wellington, Texas	90,000	Southwest Central Rural Electric Cooperative Corp., Indiana, Pa.
45,000	Carteret-Craven Electric Membership Corp., Morehead City, N. C.	540,000	Pointe Coupee Electric Membership Corporation, New Roads, La.
50,000	Middle Georgia Electric Membership Corp., Vienna, Ga.	400,000	South Louisiana Electric Cooperative Assoc., Houma, La.
50,000	Riceland Electric Cooperative, Stuttgart, Ark.	50,000	Pee Dee Electric Membership Corp., Wadesboro, N. C.
100,000	Southern Pine Electric Cooperative, Brewton, Ala.	120,000	Cooperative Light and Power Assoc. of Lake County, Two Harbors, Minn.
520,000	Volunteer Electric Cooperative,		Sioux Electric Cooperative Assoc., Orange City, Iowa

(Continued on page 24)

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LOANS APPROVED OCTOBER 25 THROUGH
NOVEMBER 24, 1954

ELECTRIFICATION

(Continued from page 23)

415,000 Sun River Electric Co-
operative,
Fairfield, Mont.
50,000 North Arkansas Elec-
tric Cooperative,
Salem, Ark.
525,000 Central Virginia Elec-
tric Cooperative,
Lovingston, Va.
50,000 Northern Lights, Inc.,
Sandpoint, Idaho
92,000 Wayne County Rural
Electric Membership
Corp., Richmond, Ind.
240,000 Bridger Valley Electric
Assoc.,
Mountain View, Wyo.
51,000 Halifax Electric Co-
operative,
Brattleboro, Vt.
50,000 Cavalier Rural Electric
Cooperative,
Langdon, N. D.
128,000 Elkhorn Rural Public
Power District,
Battle Creek, Nebr.
50,000 Big Sandy Rural Elec-
tric Cooperative Corpora-
tion, Paintsville, Ky.
546,000 Southwestern Electric
Cooperative,
Greenville, Ill.
200,000 Cherryland Rural Elec-
tric Cooperative Assoc.,
Traverse City, Mich.
495,000 Beauregard Electric
Cooperative,
DeRidder, La.

TELEPHONE

\$ 13,000	Belmont Telephone Company, Platteville, Wis.
170,000	Umpqua Telephone Co., Elkton, Ore.
617,000	Wabash Telephone Cooperative, Louisville, Ill.
136,000	Delcambre Telephone company, Delcambre, La.
192,000	Lehigh Valley Cooper- ative Telephone Assoc., Lehigh, Iowa
194,000	Mid-State Telephone Company, San Antonio, Texas
587,000	Nash Telephone Company, Damariscotta, Me.
200,000	Avoyelles Telephone Company, Cottonport, La.
290,000	Plain Dealing Tele- phone Company, Plain Dealing, La.
47,000	Santa Rosa Telephone Cooperative, Vernon, Texas
167,000	Woodlawn Telephone Company, Woodlawn, Ill.
119,000	LaCenter Telephone Company, LaCenter, Wash.
461,000	DeKalb Telephone Cooperative, Alexandria, Tenn.